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EDUCOM

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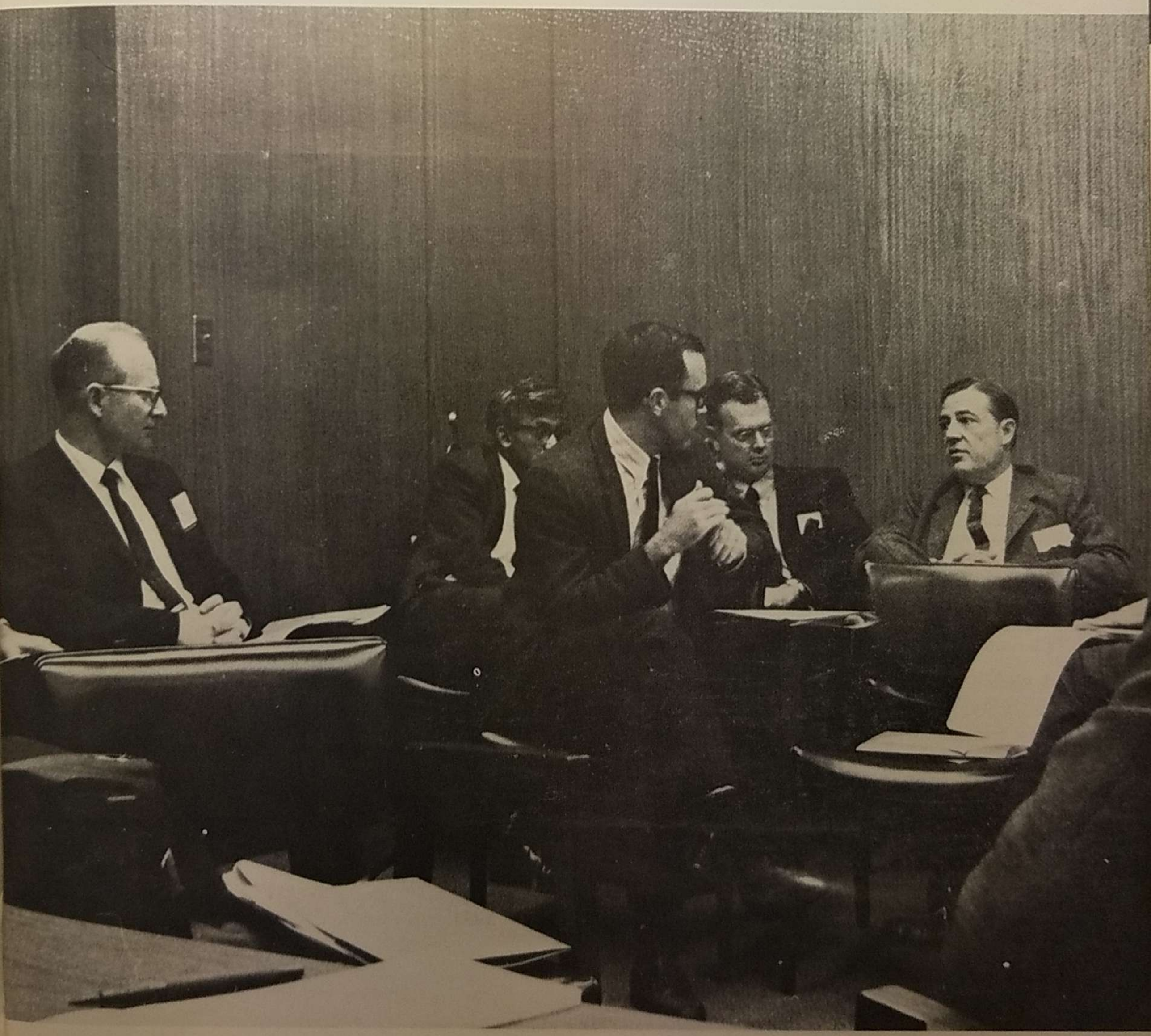

EDUCOM BULLETIN

Vol. 4, No. 6 December 1969

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On The Cover. Institutional Representatives get down to serious discussion on the problems of sharing resources, during one of the three working sessions held at the Fall Council at Notre Dame. This small group interaction has been received favorably and will be a feature of EDUCOM's semiannual meetings.

EDUCOM as a Communication Vehicle — One of the reasons for the direct-mail program, which is still growing, is the hope of making the Bulletin truly a communication vehicle instead of a unidirectional information device. A preliminary step was the solicitation of articles from member institutions and authorities in areas of EDUCOM interest. Now we are asking for a response to the ideas offered by Paul Baran in this issue about the role of EDUCOM. Representative replies will be published in the Bulletin, so that the dialog begun at the Fall Council can be continued.

Also, in an early issue, we plan to start a "Washington page" which will summarize the current legislative/administrative actions on the Hill and in the agencies that are directly related to technology and funding problems in higher education. The material will be gathered by a Washington-based correspondent, especially for the Bulletin.

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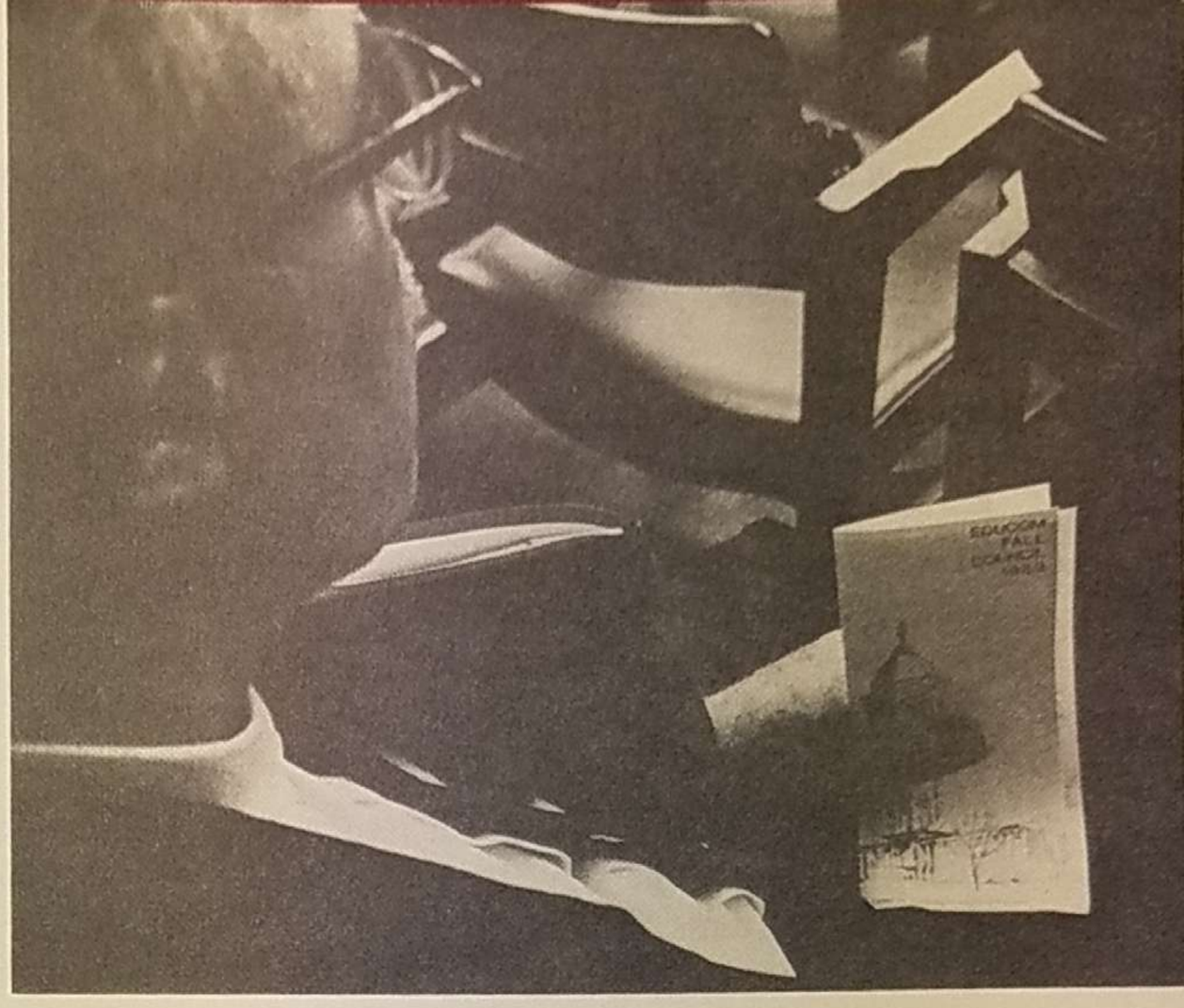
FALL COUNCIL EXPANDS MEMBERSHIP



The Fifth Annual Council of EDUCOM convened in Notre Dame's new Center for Continuing Education on Monday afternoon, 13 October 1969. The two most significant actions taken were an expansion of the membership potential and approval of a mail–ballot system for elections. A new Chairman was elected by the Council, along with three Institutional Trustees and a Nominating Committee; two new members were admitted to EDUCOM; Boston was selected as the site of the Spring Council; and a report on the status of the Bulletin's direct-mail experiment was given.

NEW ELECTION PROCEDURES

As the first order of business, the Chairman of the Nominating Committee presented the slate of candidates for positions becoming vacant. Don Mittleman, Director of the Computer Center at Notre Dame, was elected Chairman of the Council. Three Institutional Trustees were elected: Martin Greenberger, The Johns Hopkins University; William Stucker, University of Missouri; and Harold Wakefield, State University of New York. The latter two will begin a second three-year term of office.

The new Nominating Committee is: J.A.E. Bardwell, University of Saskatchewan; Russell W. Burris, University of Minnesota; Bowen C. Dees, University of Arizona; John Gunter, University of Dayton; W. Carl Jackson, Pennsylvania State University; and R. G. Selfridge, University of Florida. The Committee was charged with a new task — that of reviewing the credentials of each Institutional Representative during the coming year and then selecting two or more candidates for each position to be filled. In this way, each IR will have the opportunity for consideration and election.

Another change in the election procedure lies in the planned use of a mail ballot, on which candidates and information about them will be listed. The ballots will be sent out before the Council, thus giving a voting opportunity to all Representatives, whether or not they attend the annual meeting.

MEMBERSHIP REQUIREMENTS

The results of a year-long study by an Ad Hoc Committee on Membership, as approved by the Board of Trustees, were presented to the Council in the form of a resolution which was approved unanimously. In its deliberations, the Committee had taken a conceptual view of membership, rather than a strictly organizational one. Membership requirements were defined in terms of interest and participation, and then in terms of organizational structure. Applicants must:

1. show evidence of primary interest in higher education;
2. demonstrate significant concern with the use of technology in resource sharing;
3. be a college, university, junior or community college, a university sponsored consortium or functional organization, or a university oriented service organization.

In addition to present members, colleges, universities, and community (junior) colleges will have the vote and all services; other members admitted will receive all services, but not a voting privilege. Applications for membership and problems of membership and procedures will be reviewed by a permanent Committee on Membership and Procedures.

Applications from the University of Alabama in Tuscaloosa and the Universite Du Quebec were approved by the Council. The former was, until recently, a part of the University of Alabama at Birmingham (an EDUCOM member) but is now separately administered and eligible for individual membership. Quebec is a new, decentralized university with its headquarters in Montreal.

BULLETIN DIRECT-MAIL EXPERIMENT

Beginning in May, return cards requesting the name and address of individuals in EDUCOM member institutions were included in the 100,000 copies sent out in bulk. At present, there have been over 7,000 replies, and the Bulletin is being mailed directly to those respondents.

The following paper is taken from an address made to the Fifth Annual Council of EDUCOM. It reflects the personal opinion of the author and is offered for the information of readers of the Bulletin. Comment on the ideas presented in the paper is requested. A representative group of replies, selected by the Editorial Advisory Board, will be printed in the Bulletin.

LEGISLATION, PRIVACY AND EDUCOM

Paul Baran
Institute for the Future

I have been asked to speak on the issues of legislation and privacy raised by the advent of electronic information-processing systems. I plan to cover the subject briefly and then address long-term implications, some of which are of specific interest to EDUCOM. During the last half-year, several excellent and comprehensive selections have been written on computer privacy; for example, Arthur Miller's article in the *Michigan Law Review* and Lance Hoffman's article in the *ACM Computing Surveys*. Add to this the earlier major works of Alan Westin and the consideration of the subject given in recent Congressional hearings. One who is interested is left with the feeling that there is little new to say on the subject.

Even with all that has been said, a solution to the problem of ensuring the privacy of data is still lacking. Like so many of society's complaints, this does not have an easy answer. Either some concepts of law and administrative procedures will have to be bent to accommodate the new problems of privacy, or we may have to develop new institutions — or possibly even learn to live without the level of privacy to which we are accustomed.

In this talk, whenever I speak of EDUCOM, I refer to it not in its present form, an academic consortium trying to live on a limited budget, but rather, I view it (or more likely one of its intellectual offsprings much further in the future) as a logical and evolutionary successor to the bricks–and–mortar university of today that could lead to a system of education much more removed from the accidents of geography and with lessened reliance upon limited local resources and the immediate self interest of local administration.

The present university is undergoing increasing attack. Students today view the university as a set of local fiefdoms teaching irrelevant subject matter and keeping the students in line by requiring them to jump through exercise hoops. Yet, even the more radical students would agree that there is probably no current, workable alternative to the university — certainly, none which could survive. But, at a later date, if we do indeed separate the process of information flow from the bricks and mortar of the university, an alternate form of university education will be conceivable. Unlike the parents — the university, the child — EDUCOM is a very healthy concept; its hopes, however, will need time to materialize.

LEGISLATIVE EXPECTATIONS

Now that we have touched upon this subversive subject, the evolution of the successor to today's university, we are ready to return to the more specific topic of privacy and legislation. I would first like to review what we might realistically expect from legislation, and what help we might expect from the computer technologists in preserving personal privacy. Then I will review the National Data Bank concept and discuss how, by underestimating the intelligence of Congress and the electorate, it allowed itself to be misunderstood.

As I suggested a moment ago, however, the underlying message goes further than the issue of privacy. The early discussions on computer privacy were marred by simplistic thinking. Technologists, computer systems designers, and statisticians felt that the question of privacy was one for legislation alone. They did not recognize that although there is much that legislation can do, there is much that it can not do.

Life has a way of being more complicated than that. For example, consider the flagrant, widespread advertising of bugging devices in electronic hobby magazines. Legislation was passed. The advertiser no longer proclaims the fun and profit in bugging your neighbor's mattress, but he does attempt to sell identical equipment as miniature electric baby minding devices: "Hear your child crying when he is down the street." The point here should not be misunderstood. In this instance, legislation has helped. The advertising is not nearly so flagrant, and there is less of it. This suggests that the bugging business is less profitable, and hence fewer quantities in use. Some of the more insidious devices — the type used to tap a telephone on the other side of the continent — are no longer marketed openly. Now you have to do it yourself.

Another example concerns the move on the local level to try to keep files accurate by allowing students and parents to see and review their own records. What has been the response? Now we keep two sets of records, much like the psychiatrists who keep two sets — one to be subpoenaed, the other in abbreviated form to record the delicate data.

Laws are only fully effective against men who accept them. Those persons who disagree tend to regard them as merely another intellectual challenge. The police and

the courts are up against two problems: First, the difficulty of ascertaining intent; Second, the ease with which a lawbreaker can conceal a breach of privacy. Thus, the criminal is not only hard to catch but also more difficult to convict.

OTHER METHODS OF SECURITY

Consider the commodity that is information. It is something that can be stolen and still be there. How intangible can a *good* be? In a domain where laws alone are of highly limited usefulness, we cannot take very seriously the computer–system designers who shrug off the problem by asking, "Why doesn't somebody pass a law?" The computer people who wish to pass the buck to the lawyers have their counterpart in some non–technical souls who wish to pass the problem back to the computer people — "Why don't you simply design a foolproof computer file system?"

Enough has been said in the last few years about the difficulty of building foolproof systems and of the tricks to subvert such systems. There has also been some fine work done on developing techniques to design better, more secure systems. One thing that stands out in reviewing this work is that the bulk of the useful contributions, publicly made, have come almost exclusively from those in the universities and the independent nonprofit organizations. The response to this problem by the commercial sector of the computer industry has been disappointing.

This experience suggests that researchers in the university and in nonprofit organizations can expect to continue carrying a disproportionate portion of the burden of developing both concepts and hardware for the preservation of privacy in future automated data systems. The last paragraph of Arthur Miller's recent major article, "Personal Privacy in the Computer Age: The Challenge of a New Technology in an Information Oriented Society," (*Michigan Law Review,* **67,** 6, 1969) contains a directed plea to EDUCOM:

> Perhaps the most imperative need at this point in time is a substantial input of human resources to help solve the many privacy problems posed by the new technologists. The experimental laboratories exist — the federal agencies and many private organizations, such as the Interuniversity Communication Council, can provide the necessary structured context in which to test the privacy protecting capacity of hardware, software and administrative procedures.

I know that the fledgling EDUCOM is almost overwhelmed with things it might do. But this plea is one that I hope would be seriously considered, for EDUCOM has a natural role to play here.

I do not mean to disparage the work presently being done by the commercial sector of the computer industry. They, too, have contributed in their hardware and software designs. As a matter of degree, one would have hoped that they pursued these issues diligently, and with less secrecy. This is an arena where silence is almost equivalent to irresponsibility, and some people act as if they wish to take the Fifth Amendment. In private discussions, I receive the following expression of position from a few of those who are publicly silent:

1. Talking about the problems of privacy in geographically distributed shared-information systems is not conducive to the sale of such systems.
2. We are still trying to meet initial advertising claims of equipment we manufactured several years ago. We have enough software problems without another major complication added to system design.
3. The problems of leaky system design are germane only to a few isolated systems that are carrying "touchy" data.
4. The customer doesn't want safeguards, and is not willing to pay for them.

These points are all well taken. The moral, however, is that we may be making as much of a mistake in expecting the computer manufacturers to straighten out the privacy problems as we have made in expecting automobile manufacturers to design adequate smog-control devices of their own accord and without prodding. Solutions to technological problems cannot be expected without a positive financial reward structure, which does not yet exist.

POTENTIAL ROLE OF EDUCOM

Of what significance is this to EDUCOM? The data EDUCOM presently contemplates exchanging appear innocuous. But let us return to the long–range view of EDUCOM as a major experiment in applying technology, in sharing resources, and in providing a major improvement in the flow of information among universities. EDUCOM is probably the organization that best appreciates the essential ingredient of higher education which is the *information* available and transmitted to the student, not the structure of bricks and ivy in which the student exists.

Any organization that still remains in the forefront of this information exchange business, even five years after its incorporation, is, in my mind, already an institution. As an outsider, I am probably in a better position to view what is happening. And if not a better observer, at least I am in a position to be less modest about it. While EDUCOM may be concerned with the seemingly great difficulties of coping with the most modest of information-sharing efforts, one on the outside can look at this in more global terms and visualize the eventual evolution of EDUCOM into an organization capable even of coupling the members of those "invisible colleges" — the men who share rough drafts and semipersonal research-data files.

Of course, there are other technical communications systems now in use — the professional and technical societies, for example. These efforts, however, tend to be restricted to individual and rather specific subject areas which are already recognized. Most of the important

action takes place before a field is recognized as a field; therefore, EDUCOM is in a unique position to trigger a future universal/intellectual interchange.

Thus, I believe that EDUCOM, or a successor, or an offshoot responding to a series of pressures, may well be the nucleus of an electronically interconnected world university, one that might some day even move from the role of a consortium common servant to that of a conglomerate holding corporation in education — and all that this implies. Its position in the information exchange process could cause it to evolve from that of a communications channel to that of a *keeper* of the channel.

THE NATIONAL DATA BANK PROBLEM

If EDUCOM does move along lines anything like these, then it could find itself exposed to the public scrutiny that befits those institutions upon which society confers, even reluctantly, major power. With the vacuum of alternative institutions, EDUCOM could find itself in an expanded role, unprepared. And it could find its intentions as misunderstood as the proponents of the National Data Bank found theirs. Perhaps the analogy is strained, but I think that it is one that should be considered.

The original National Data Bank (wisely renamed two years ago as the Federal Statistical Data Center) was also to be a resource–sharing agency to expedite communication of statistics within the academic community. It proposed to gather together the thousands of existing magnetic computer tape records in various government agencies to create a new national information resource for research purposes. Its proponents sought to eliminate costly duplication of records and loss of historical data. They also sought to permit new uses for data: for example, it would permit researchers to build better models of our economy, allow a wider access to more data, and, by improving the data–collection process, increase the feasibility and accuracy of various analyses of social problems such as welfare.

The public outcry about the National Data Bank was triggered by a classic public relations mistake, one of the finest of the decade. The very presumptiousness of the name, "The National Data Bank," was almost enough in itself. A more infuriating title could hardly have been found to arouse public anger. These words were, at least in retrospect, ones that begged interpretation in literal terms: an image of a massive, centralized dossier file open to Big Brother or any of his alternative, incarnate forms. Whether the image was real or not proved irrelevant; image and reality become inseparable in dealing with the complex. The computer, to the public, is the epitome of complexity; the result — almost a predestination to public emotional violence.

The seething fears long accumulated in a continuous stream of blatant misuse of now computerized personal data files emerged. The formal name, "National Data Bank," was all that was needed to create a lightning rod to attract the bolts of legitimate outrage pent up in storm clouds of emotionalism. Of course, the problem had been with us for a long time, and it still is. But this was the first highly visible and tangible outlet for the complaint. The specific proposal, offered initially, had an Achillean Heel: its long–term implications. The original proposal was totally lacking in mechanisms to ensure the right to privacy of those individuals whose records were to be manipulated in order to derive statistics.

The dissection of the Data Bank proposal in Congressional hearings, particularly the analysis of the depth of thought that went into anticipating its long–term consequences, was both painful and amusing. It was a case where some otherwise erudite witnesses believed that they were dealing with unsophisticated Congressmen — always a bad mistake, but doubly bad if one hasn't done his homework. When questions were asked about privacy controls and the ease of misuse of the files, it was clear that the proponents of the system had not only neglected their homework, but they had tried to design the system details "at the blackboard."

The public press, sometimes more interested in attention–getting headlines than in a balanced presentation of complex issues, mishandled the subject. The Congressional hearings, which were much more balanced than their press coverage, set off a major and highly useful continuing public debate on the larger issue: "How shall we control the technological development of electronic information systems carrying personal data, balancing the attainment of the greatest efficiency in government against the price of minimum loss of personal freedom?"

The discussion goes on. No one has the answers, yet.

EDUCOM AND DATA BANK COMPARED

It is not possible to draw out a one-for-one analogy between the fate of the National Data Bank and the future evolution of what is now EDUCOM. But some points are worth thinking about:

1. Both are new institutions.
2. Both are new institutions whose need is increasing.
3. Both are academically inspired and seek to fulfill academic ends.
4. Both institutions can be highly centralizing in their control, although distributing access more broadly.
5. Both may have to live at the pleasure of the Federal Government, and could be regarded as possibly threatening to the historic rights of freedom of choice, if subverted.
6. It is too early to see where either institution is going, or might go, in the long–term future.

EDUCOM, however, is evolving slowly. Even if it's just able to stay around as technology improves and needs increase, it is not inconceivable that time could thrust EDUCOM into a position with the major institutions in higher education.

I think that society has the right to ask, and EDUCOM the responsibility to answer, "What is your contingency plan for success?" "Where are we all going if you are completely successful in achieving your goals?"

EIN SERVICE INITIATED AT COUNCIL

The Fall Council of EDUCOM at Notre Dame on 13 October 1969, was the scene of the initiation of operational service by EIN (Educational Information Network). This important stage in the development of EIN was presented and discussed at a workshop session of Technical Representatives and other interested attendees, held in conjunction with the Council. At the core of the session was a meeting of the Executive Committee of EIN for the purpose of explaining the application of the service and the administrative procedures for using it.

At the beginning of the workshop, Dr. Thomas Keenan, Executive Director of EIN since its inception in July, 1968, announced his resignation from that position to accept an appointment to the National Science Foundation Office of Computing Activities. He turned the session over to Dean Demos Eitzer, Director of Audio–Visual and Computer Affairs, City University of New York, the new Chairman of the EIN Executive Committee. Dean Eitzer introduced John LeGates, who has recently joined EDUCOM as Manager of Operations for EIN.

Mr. LeGates was formerly Vice President of Cambridge Information Systems, where he was involved in the development of computer systems to aid hospital management. He has also been associated with Bolt Beranek and Newman in the application of time sharing to secondary school instruction. A graduate of Harvard in mathematics, he has also done graduate work at Yale and is a Kent Fellow.

EIN VIDEO PRESENTATION

EDUCOM's interest in the applications of new communication technology was evidenced in the workshop with the presentation of a video tape made at the studios of Northeastern University in Boston. In demonstrating the method of using the EIN service, it uses interviews with the principals of the network juxtaposed with sequences dramatizing the steps to be taken by the users in member institutions to locate applicable programs and to get them to the pertinent resource for fulfillment. [The tape runs 23 minutes and is available on loan from the EIN office on ½ inch, 1 inch, and 2 inch SONY video tape and also on 16 millimeter sound film.]

Discussion which followed the tape brought out its potential as a vehicle through which Technical Representatives or Institutional Representatives, as well as those institutions interested in joining EIN, could explain the network to faculties and administrations.

DOCUMENTATION, SUBMISSION, DISTRIBUTION OF PROGRAMS

At this point the session was thrown open to the floor for discussion among the attendees, and between them and the Executive Committee. The participants were not only the present Technical Representatives but also attendees from EDUCOM member institutions and other organizations interested in the project. One of the subjects that was discussed was the procedure for documenting programs to be listed in the *EIN Software Catalog*. The expressed opinion was that those procedures listed in the already published *Documentation Standards Handbook* were generally satisfactory. The *Handbook* has been widely distributed and is available to interested parties without cost. Several member institutions have used the standards specified in the *Handbook* as a guide for their own internal documentation. It was pointed out that the programs submitted in other forms have to be edited and documented by EIN personnel, creating a time delay in the publication of additional catalog supplements. Priority therefore falls to those programs already documented in close accordance with the specified standards. Discussion arose about the validity of a relatively brief documentation of complex programs. A solution to this situation might be a review prior to publication. This would be done by the submitting resource. EIN will initiate this review at such time as the publication schedule is sufficiently advanced to permit the necessary time lapse.

Another form of review which was recommended and adopted by the Executive Committee is the circulation of a list of programs that are presently under consideration for publication. Members of EIN can then assist the process by indicating those which they think most useful and also by noting additional programs of their own which relate to those listed. This type of feedback will encourage participation by member institutions. It will also stimulate interest within the institution, and help the TR find out where his user's interests lie.

Some of the questions put to the EIN Executive Committee concerned the advantages of listing computer programs in the *EIN Software Catalog*. An immediate answer was that, under the EIN system of charges, use of a computer program outside of an institution can increase the revenue at that particular organization's computer center. At a more personal level, the authors of the unique program obtain recognition for their work through the medium of a catalog listing. In this connection, the committee stated that scholarly journals would be asked to print notices of the EIN listings in a manner similar to the present bibliographic listings of scholarly articles. At a practical level, the listing of a program establishes computing credit of a center, which is prerequisite for access to other programs within the network.

NETWORK USAGE PROCEDURES

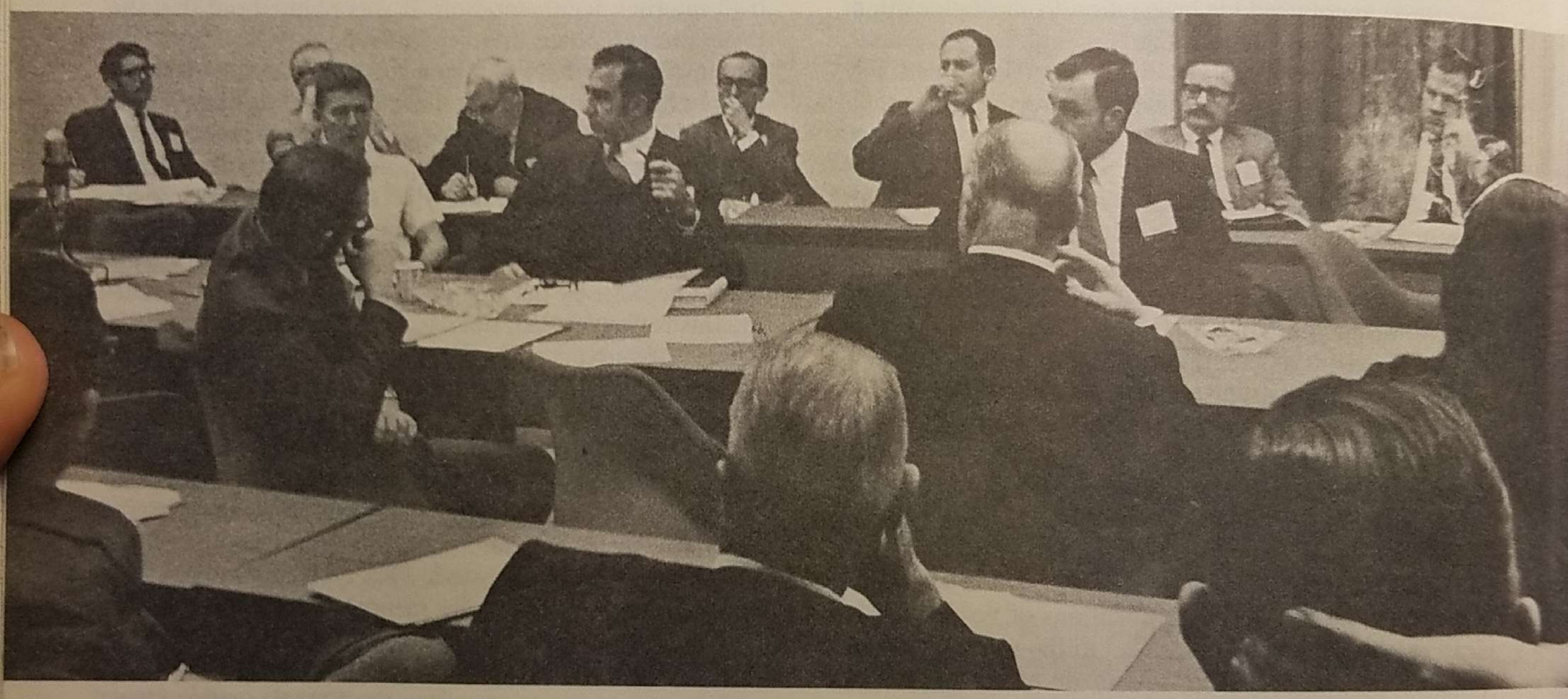
At the workshop, the Job Run forms and Account Initiation forms were distributed for the first time. The latter is

an official notification of intention to use a program listed by another member. The initiating institution fills in the form, sends it to the EIN central office which approves and records it and then forwards it to the resource having the desired program. In this way, a permanent account is established between two organizations. The Job Run form is used as a direct means of communication between the requester and the resource. Quantities of these forms have been sent to the Technical Representatives and will be provided to new members to the network.

The EIN accounting system requires that some form of credit be established prior to network use. The credit can be initiated by a cash deposit, by purchase order, or by making available to the network an amount of computing power with a value of up to $1,000. The latter method may only be used by those resources which have one or more programs listed in the *Catalog*. In this way, maximum mutual use of the network is encouraged because a minimum of cash has to be transferred and accounted for. At the request of some of the attendees, other methods of establishing credit will be evaluated.

The *EIN Software Catalog* has already been distributed to Institutional Representatives and to Technical Representatives. It is contained in a large ring binder so that supplements, three of which have already been published, may be conveniently inserted. Two copies are automatically sent to each Technical Representative; additional copies, with the supplements as they appear, can be ordered for $75.00 each per year.

The workshop provided a convenient form for the exchange of ideas. These meetings will be held regularly at the EDUCOM meetings.



A serious moment at the EIN Workshop

A SUMMARY OF THE FILE RESOURCES WORKSHOP

A workshop on File Resources was also held at the Fifth Annual Council, 13 October 1969, at Notre Dame. The panel that had been gathered for the session consisted of Margaret Park, Chairman; and Hilary Lent Burton, Allen Kent, and John A. Vinsonhaler, members. Richard Ferguson, EDUCOM Staff Information Scientist, was the coordinator, and the participants included both Institutional Representatives and Correspondents in the EDUCOM research area identified as Libraries and Databanks.

PROBLEM AREAS EXAMINED

The session began by posing four questions to the participants:

1. *Are there file resources available and wanted for sharing among our member institutions?* This question seemed to point to the need for file resources and the problem, how to involve user/suppliers in the resource-sharing task.
2. *What organizational tools and capabilities are needed to facilitate file–resource sharing?* This question presup-

posed that there were benefits to be gained by sharing file resources among organizational members. Without begging the question, the next step was to decide what resources or tools and capabilities then seemed necessary.

3. *What problems are associated with the cooperative use of file resources?* While it seemed likely that there was a desire for file–resource sharing, it seemed equally likely that there were undiscovered problems involved, and it was expedient to take up that particular area of emphasis in the workshop to uncover some of the barriers that might exist.

4. *What technical capabilities are required to facilitate file resource sharing?* This brought in the area of file–resource sharing mechanisms, which ranged all the way from the U.S. Mail to highly sophisticated computer networks.

MARGARET PARK

Miss Park, an Information Scientist at the University of Georgia, has worked with the Chemical Abstracts Service and is presently developing and implementing file management systems and search services, particularly those based on bibliographic data for use both on and off campus. She listed some of the operating information files — Chemical Abstracts, Engineering Index, NASA, MARC — and pointed out that these were file resources available for sharing, in the context of the workshop's focus. At the University of Georgia, there is a file resource of seven or more data bases, and access to several more. The University provides its services on a demand or subscription basis, but this is not the same as resource sharing among many universities.

The Chairman listed what she considered as the major operative problems in organizing resource sharing:

a) Standardization of files, data format, and management software;

b) Diversity of user environments, computer systems, and resultant duplication of effort;

c) Organizational/administrative barriers to use of resource-sharing programs;

d) Effective dissemination of resource material through networks.

HILARY BURTON

As a member of the Computer Services Library of the Forest Service, U.S.D.A., Mrs. Burton has specialized in personal documentation. Within the Forest Service, for example, scientists wanted cross-disciplinary access to files of information which they then wanted reorganized, abstracted, and stored in a reference collection specifically oriented to their individual needs.

In response to this approach, the library first attempted to use the station library's Book Catalog Computer Program to manage these personal bibliographic reference collections. As each collection tended to grow, however, it exceeded the capabilities of the program to provide efficient access, thereby necessitating development of FAMULUS — the personal documentation system now operating at the center. The programs execute on several computers: IBM 360, Univac 1108, and CDC 6000 series. The system allows the user to construct bibliographic files, with or without abstracts, and to index the collection as desired. Among the more significant features of the system is the ability to edit, update, and maintain a file easily, restructuring the access paths from time to time as necessary. Future plans include the ability to use FAMULUS directly in conjunction with the Biomedical Package (BMD) for data analysis and reduction.

Mrs. Burton noted several points of interest for the file-resource group:

a) The personal documentation approach facilitates file–resource sharing on the level at which individual scientists perform reference work — that of a task-specific basis with maximum flexibility required for file restructuring and access;

b) The personal documentation system enables one to perform cross-disciplinary file access, and therefore file sharing, regardless of disciplinary approaches to file organization and structure;

c) Personal documentation tends to supplement current file services available, because the user may merge citations from several secondary sources, redefining index terms and restructuring access paths in a manner more useful than the standard thesaurus approach.

ALLEN KENT

The third member of the panel was Allen Kent, Professor of Library and Information Science at the University of Pittsburgh and Director of the Knowledge Availability Center. He also operates a large–scale file–resource sharing program based on the assumption that if graduate educational programs in a given discipline need adequate library collections to support them, then the university should be in the business of providing file services or get out of the educational program for that discipline.

He then turned to a discussion of the experiences and activities of the University of Pittsburgh in providing access to files. The cost of providing such services is prohibitive if a university attempts to undertake the acquisition and management of these files on an individual basis. Emphasis is therefore upon arranging remote access to as many large, centralized data bases as possible. For example, the University of Pittsburgh has access to the NASA file, the Chemical Information files, the Defense Documentation Center file, and the COSMIC computer programs.

Mr. Kent pointed out several problems related to file resource sharing:

a) The difficulty of amortizing costs for purchasing file services. The center must not only pay whatever fees or royalties are imposed by the service but also assume the remarketing and maintenance costs that are related to a satisfactory university service;

b) Content overlap between interdisciplinary files such as NASA and the Defense Documentation Center. For each, there are also differing tape formats, and levels of

indexing, requiring some transformation to a single format for efficient utility;
c) Differing depths and philosophies of indexing across the user population. Controlling vocabularies via thesauri only partially addresses the problem, resulting in either a shallow penetration into the subject matter or in weighty and generalized vocabularies. Both of these promote difficult search strategies that do not give adequate service;
d) Implementation of an effective file service often whets the user's appetite for more raw output (citations, documents, etc.) than it is possible to provide at reasonable cost;
e) The interactive approach to file–resource sharing, while enticing, is expensive and must be limited to small file subsets. User satisfaction is, therefore, difficult to maintain at a reasonable cost;
f) File service companies are moving toward a limited–access arrangement based on a royalty or leasing system that is, by and large, unacceptable to university administrators. Unlimited access and/or ownership of the data files would threaten the business of the service organizations, while leasing or royalty arrangements threaten the universities' budgets.

He summed up his presentation as being a "council of despair, which can only be approached via cooperative activity in organizations such as EDUCOM."

JOHN F. VINSONHALER

The fourth member of the panel, Dr. John F. Vinsonhaler of the Learning System Institute of Michigan State University, has been active in the development of the Basic Indexing and Retrieval System (BIRS). He began his presentation by addressing the problems of file–resource sharing via computer programs. He advocates the use of hardware/software/data–base combinations known as "dissemination packages" for file sharing. As principal author of the U.S.O.E. BIRS, he designed the system for portability (a kind of machine independence) and usability by non–computer–oriented educators. The BIRS system is similar to the Generalized Information System (GIS) and is operable on both IBM 360 and CDC 3000 and RCA Spectra 70 series of computers. BIRS consists of a set of programs for storage, indexing, bibliographic production, searching, and retrieval. A new set of numerical analyses and statistical report generation programs are presently being added to broaden the application of the system.

Dr. Vinsonhaler described the use of the BIRS system to exchange and manage U.S.O.E. files, specifically the Bureau of Education for the Handicapped (BEH) files, the Project Resumes Information Systems (PRIS) files, and the AID to State Information System (ASIS) files. Although each file consisted of a variety of data types, it was possible to create a "dissemination package" for each, and to implement the package in several locations, using several different types of computers. The successful use of these packages has reduced both the cost and difficulty of sharing files by users in remote locations. He suggested that EDUCOM consider using this approach, which works as follows:
a) An archival copy (written in USASI FORTRAN) of the file management system and a program transformation system is used to create a modified operational version of the system for the required computer installation.
b) A file–duplication system is used to reproduce and verify each installation package needed before it is sent to the user centers.
c) Maintenance operations such as updating, modification or revision of the files or programs, result in a new dissemination package which is created centrally and sent out to users.
His summary stated that it should be economical for EDUCOM to share file resources through the use of computer programs and databanks utilized together in a file–dissemination package. Portable information management systems and files taken together, simplify the process and encourage the creation of standard record formats, standard thesauri, and thus cooperation. In Dr. Vinsonhaler's words, ". . . one effect of having a group of people share programs is to make them want to share data, and that might be the most important thing that EDUCOM could do."

WORKSHOP ACTION

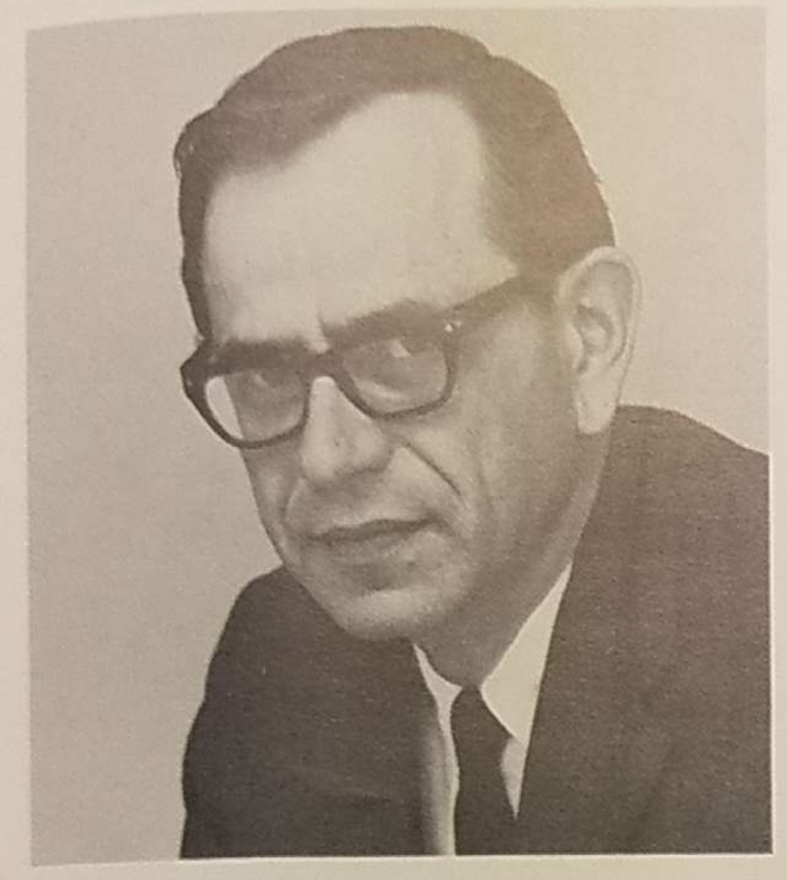
From the discussion which followed, the basic problems became rephrased as specific questions to be answered by a panel on Libraries and Databanks:
1. Should File Resources be a separate area of development in EDUCOM or should it be operable as a part of the EIN* program?
2. If separable, should library resources and databanks be dealt with together or in separate groups?
3. What files are presently owned by EDUCOM member institutions? Of these, how many others would like access to or service from those files?
4. How many public data bases are available for sharing?
5. What future action should be organized to facilitate file resources?

An Executive Committee was chosen to govern the work of the Panel and to coordinate the answers to the questions above. Its members are:

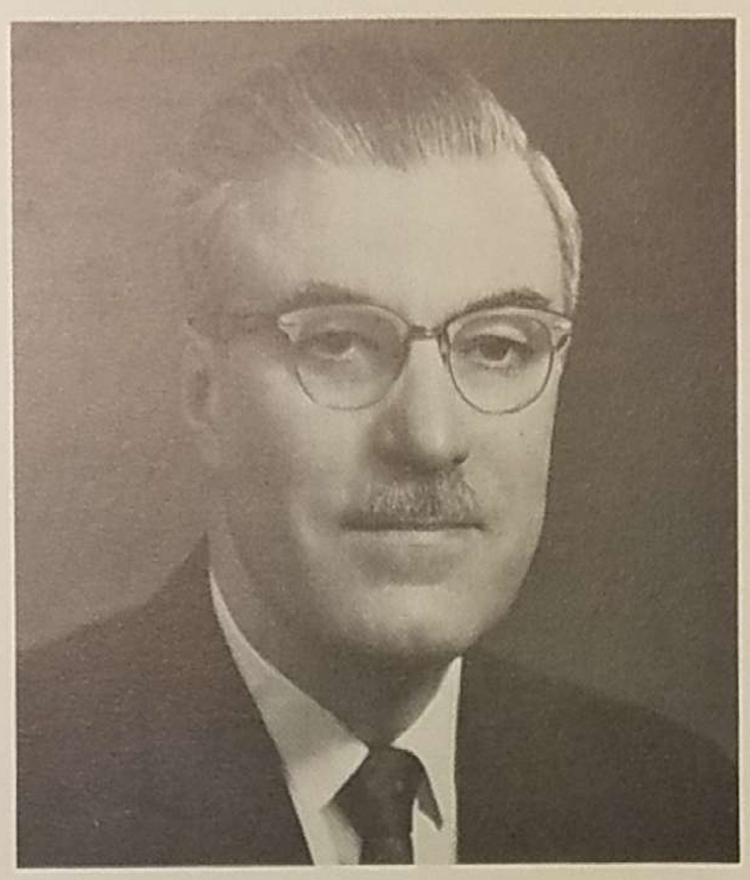
Mr. David Blackwell, Data Processing,
Educational Testing Service
Dr. James L. Carmon, Computer Center,
University of Georgia
Dr. Robert Ennen, Technical Service,
University of Notre Dame
Mr. Allen Kent,
Knowledge Availability Systems Center

Con't. page 9

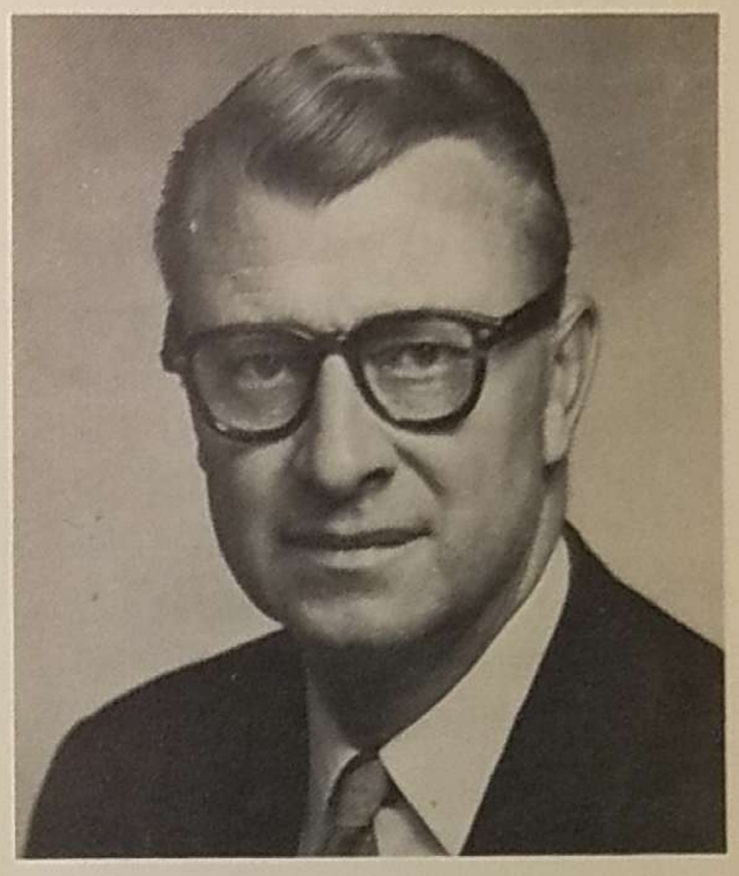
**EIN — Education Information Network. See pp. 5 and 6, EDUCOM, 4:6, Dec. 1969.*



Don Mittleman, Council Chairman



Don Katz, Board Chairman



Harold Wakefield, Trustee

NEW COUNCIL CHAIRMAN

Dr. Don Mittleman, Director of the Computer Center at the University of Notre Dame, was elected Chairman of the Interuniversity Communications Council at the Fall meeting. He replaces Dr. Martin Greenberger, The Johns Hopkins University, who was then elected as a Trustee. Dr. Mittleman also becomes a Trustee, ex officio.

The new Chairman is a graduate of Columbia University, where he received his BS, MA and PhD in mathematics. He has been a teacher, and a mathematician at the National Bureau of Standards and at the Harry Diamond Labs. Entering the computer sciences, he served as Chief of the Computation Laboratory at N.B.S. and in 1964 became Director of the Computing Center at Notre Dame. He has been the Institutional Representative from the University for several years and during the last year served on the Ad Hoc Committee on Membership. Dr. Mittleman has developed a strong interest in computer art and examples of his work appeared on the covers of *EDUCOM* in February and March of this year, plus an article on the subject in the latter (*EDUCOM*, **4,** 2, March 1969).

BOARD CHAIRMAN REELECTED

At the first meeting of the Board of Trustees following the Fall Council, Dr. Donald Katz was reelected as Chairman of the Board for another year. Formerly the Vice Chairman, Dr. Katz succeeded to the chairmanship on the resignation of Dr. Thomas Hunter earlier in the year. He is the Institutional Representative from the University of Michigan, where he is the A. H. White University Professor of Chemical Engineering. He is a Fellow of the American Nuclear Society and in 1968 was elected to the National Academy of Engineering. An authority on petroleum and natural gas engineering and on engineering education, Dr. Katz has published extensively in both fields. Among his works are: *The Handbook of Natural Gas Engineering,* McGraw-Hill, New York, 1959; *Engineering Concepts and Perspective,* Wiley & Sons, New York, 1967; and "Are We Prepared to Use our Computer as an Information System?" *Journal of Engineering Education,* April 1968.

WAKEFIELD NEW TRUSTEE

Harold B. Wakefield recently replaced Gordon Osborn as Institutional Representative from the multi-campus State University of New York. In that position he acceded to the membership on the EDUCOM Board of Trustees held by SUNY. At the Fall Council, Mr. Wakefield was reelected to continue to serve for three years as an Institutional Trustee. He is presently filling the new office of Director of the Office of Computer Systems Development for SUNY. As such, he will coordinate the use of computers for teaching, research and management. This will involve time–sharing, networks for computer–assisted instruction, library management information systems and the development of regional computing centers.

Mr. Wakefield has been associated with IBM for many years in systems engineering and marketing, and has served on various state and city educational agencies, including the New York State Advisory Council for Vocational Education.

File Resources *(Con't.)*

Dr. A. Knowles, Dept. of English,
North Carolina State University
Mr. John McGowan, Deering Library,
Northwestern University
Dr. John F. Vinsonhaler, Learning Systems Institute,
Michigan State University

Questions 1 and 2 are being assessed by the Executive Committee and will include communication with EDUCOM Institutional Representatives. The third question will be answered by a survey of all EDUCOM member institutions. Question 4 is being answered by the distribution of the J. C. Troutman *Inventory of Available Data Bases* by permission of Dr. Robert Hayes of UCLA. The last question is being considered by the Executive Committee and will also require further communication among our Institutional Representatives.

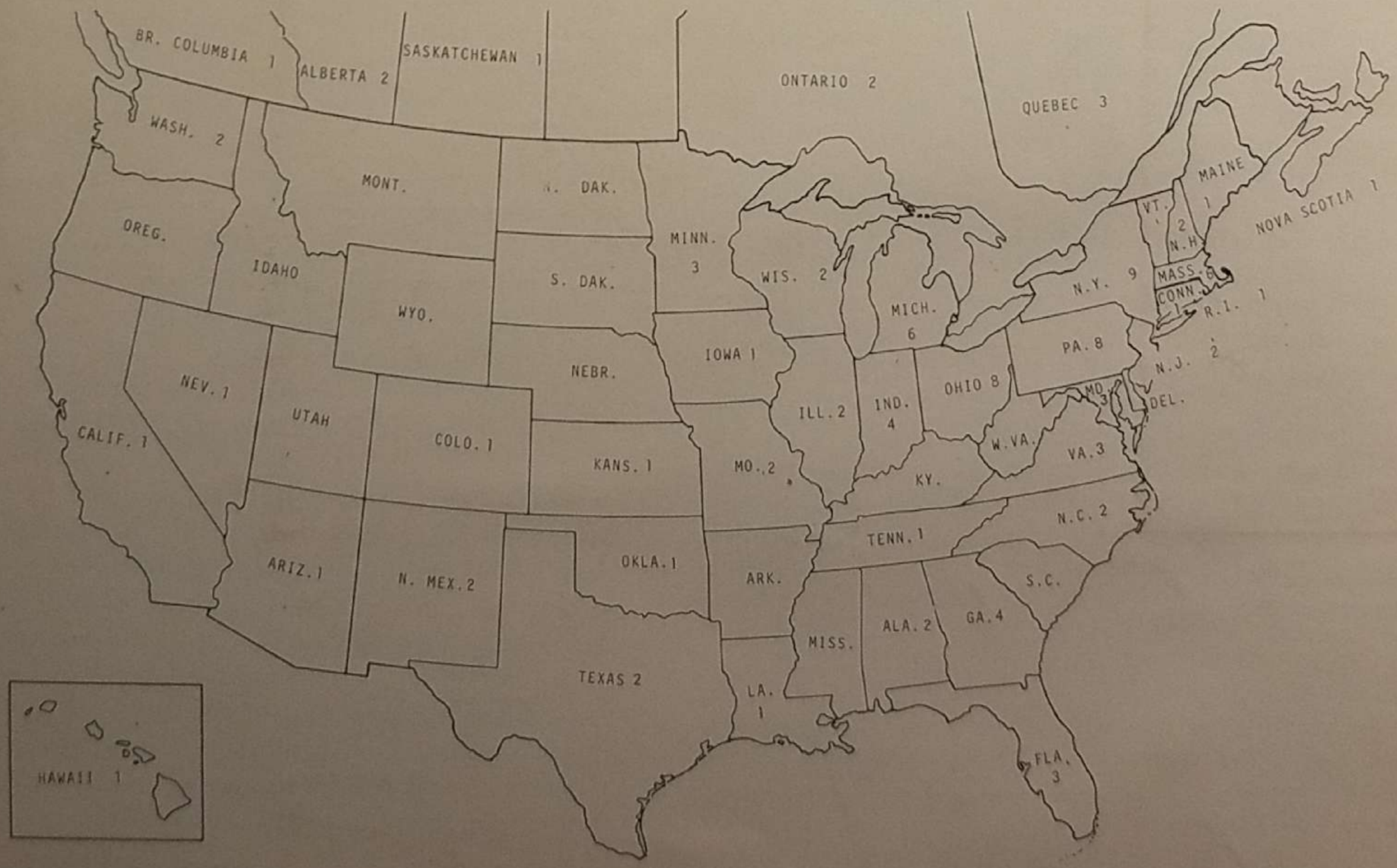
EDUCOM, 100 CHARLES RIVER PLAZA, BOSTON, MASS. 02114

APRIL IN BOSTON

What better time and place for EDUCOM's Spring Council? Wednesday and Thursday, 15 and 16 April; Charles River Plaza, Boston, the location of EDUCOM headquarters. Tentative plans call for the Council and general sessions to be held in the mornings in Charles Cinema located in the Plaza. Working sessions will be held in the Holiday Inn adjacent to the EDUCOM offices. The Inn will also house attendees who register in advance. Meetings pertaining to member activity in EDUCOM areas of interest, such as computer communications and file resources, will be held at different times so that all interested parties may attend. Check your future issues of the Bulletin for a complete program.

Boston offers not only many gastronomic and cultural delights, but also the opportunity to visit some of the leading educational institutions in the country. Group visits or tours to see these places can be arranged through EDUCOM.

Distribution of EDUCOM Members by State and Province **December 1969**



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